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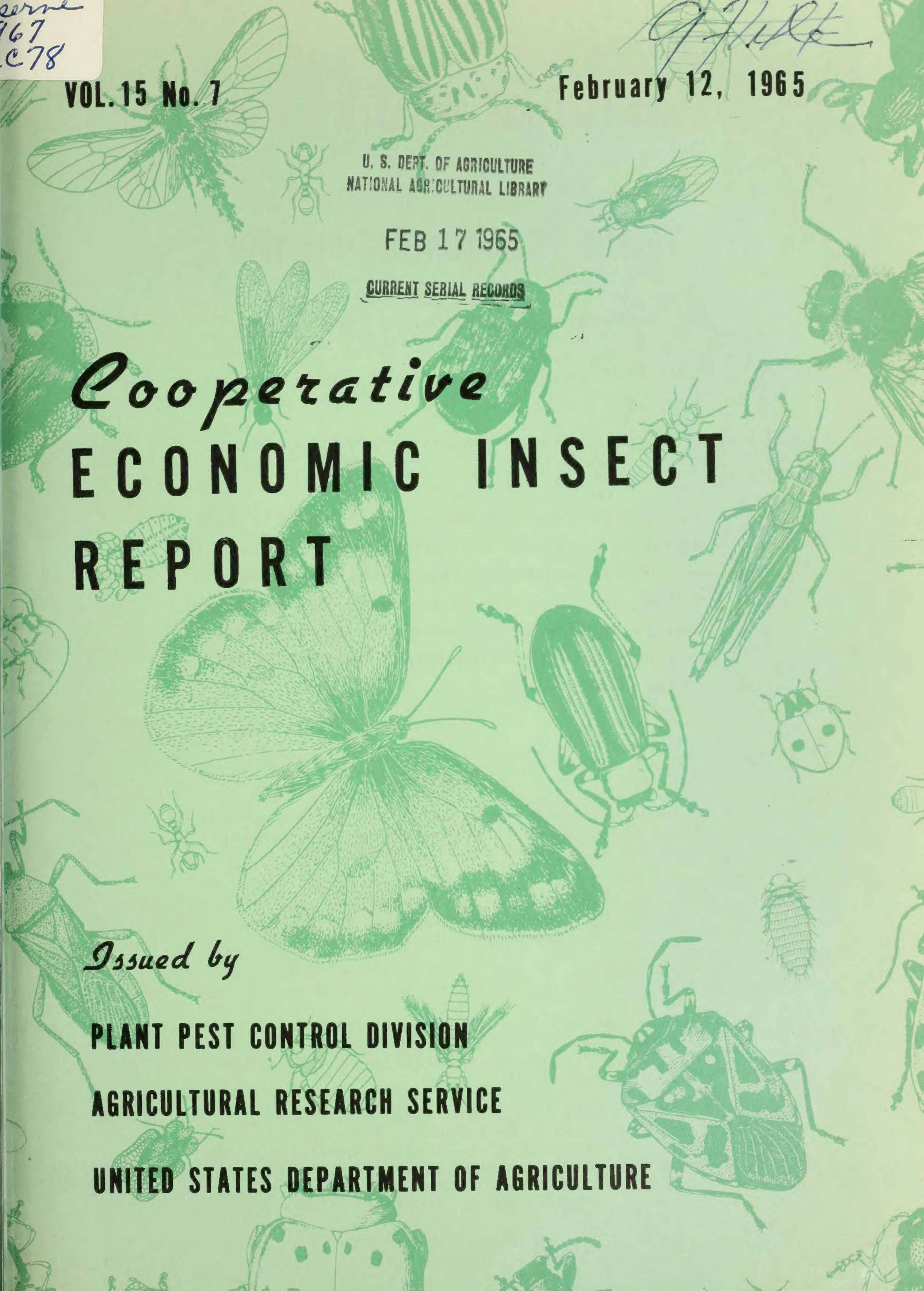

VOL. 15 No. 7

February 12, 1965

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Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 15 February 12, 1965 Number 7

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

ALFALFA CATERPILLAR adult activity increasing in Yuma and Maricopa Counties, and larvae of a WEEVIL (*Hypera brunneipennis*) appearing in alfalfa in Yuma County, Arizona. PEA APHID increasing on alfalfa in areas of Arizona, and numbers especially heavy on seedling alfalfa in Dona Ana County, New Mexico. (p. 83).

WOOLLY APPLE APHID serious on roots of apple trees in Cullman, Cleburne and Coosa Counties, Alabama. (p. 83).

CABBAGE LOOPER, GREEN PEACH APHID and another APHID (*Acyrthosiphon barri*) on lettuce require controls in Arizona. (p. 84).

DETECTION

A WEEVIL (*Smicronyx commixtus*) reported for first time in Washington. (p. 84).

CORRECTIONS

See page 87.

SPECIAL REPORTS

Status of the Screw-worm in the Southwest. (p. 89). No screw-worm cases were reported during the period January 31 to February 6.

Summary of Insect Conditions in Some Countries in the Near East and Africa - 1964. Ethiopia (p. 90), Republic of the Sudan (p. 91), Turkey (p. 95), Iran (p. 97), Afghanistan (p. 98).

Reports in this issue are for the week ending February 5 unless otherwise indicated.

WEATHER OF THE WEEK ENDING FEBRUARY 8

Unseasonal mild weather returned to central and eastern sections although the warming was temporary in many areas. Widespread precipitation was light in the midsection but heavier in the East, South, Southwest, and extreme West.

TEMPERATURE: General warming occurred over the midsection of the Nation. Weekly temperatures averaged 4° to 10° warmer than the previous week over the central and northern Great Plains and the upper Mississippi Valley. This was mainly due to a brief invasion of warm air which sent temperatures into the 60's in Nebraska and southern Ohio. The central Plains area had daily maximum temperatures which would be normal for the area in April. Cincinnati, Ohio, reported 10° below zero on Thursday but was up to 58° on Saturday. However, cold weather occurred both before and after this. In the West, the Great Basin had the fifth consecutive week with temperatures well above normal. The cold core in the East was over the Ohio Valley and the southern Appalachian area with temperatures 15° below normal in eastern Tennessee. Warming late in the week ended one of the longest cold spells in many years in West Virginia-Pennsylvania area.

PRECIPITATION: Only light precipitation fell over the northern Great Basin and in most of the area from the Continental Divide to the Mississippi River. However, generous showers fell in southeast Texas. Rains affected the entire West Coast south to San Diego and beyond. A general precipitation area moved inland on Friday and Saturday bringing substantial rains to southern Arizona. Farther north there was heavy snow especially in the Flagstaff area, Arizona. The area east of the Mississippi received moderate to heavy rains over large areas with snow falling mostly in Michigan.

SNOW: Warm air and rain melted much of the snow over the Corn Belt. East of the Rockies the southern limit of snow cover is near the latitude of Chicago, Illinois, and through Pennsylvania. (Summary supplied by U.S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graminum) - OKLAHOMA - Ranged 1-2 per linear foot in wheat in Wagoner, Okmulgee, Sequoyah, Hughes, Kiowa and Mayes Counties. (Okla. Coop. Sur.). ARKANSAS - Populations in small grain continue at low levels in northwest. (Ark. Ins. Sur.).

ENGLISH GRAIN APHID (Macrosiphum avenae) - ARKANSAS - Counts in small grain ranged 5-10 per square foot. (Ark. Ins. Sur.).

AN APHID (Rhopalosiphum rufiabdominalis) - TEXAS - Probably this species present on small grains in Kaufman County. Det. by H. W. Van Cleave. (Turney).

MAIZE BILLBUG (Sphenophorus maidis) - ALABAMA - Observed on corn in Mobile County. (Boswell, Seibels, Wallace).

SQUARE-NECKED GRAIN BEETLE (Cathartus quadricollis) - ALABAMA - Very abundant on ears of corn still in fields in Mobile County. (Boswell, Seibels, Wallace).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Checks made in one field in Wagoner County showed 25 percent of stalks contained live larvae. Only 2 percent of stalks contained live larvae in field checked in Pittsburg County. (Okla. Coop. Sur.).

PINK SCAVENGER CATERPILLAR (Sathrobrota rileyi) - FLORIDA - Larvae and adults of this species and Stelidota strigosa (a sap beetle) taken on hand-pollinated sweet corn at Leisure City, Dade County. (Yahnke, Jan. 21).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Adults increasing in many areas of Yuma and Maricopa Counties. Larvae light to medium, 10-40 per 100 sweeps. (Ariz. Coop. Sur.).

A WEEVIL (Hypera brunneipennis) - ARIZONA - Larvae appearing in alfalfa in Yuma County. None found in fields surveyed in Maricopa County. (Ariz. Coop. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Light to moderate in seedling alfalfa in southern Dona Ana County. (N.M. Coop. Rpt.). ARKANSAS - Surveys continue negative. (Ark. Ins. Sur.).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Infestations increasing in alfalfa in Yuma, Maricopa, and Pinal Counties. Counts averaged 1,000 per 100 sweeps. (Ariz. Coop. Sur.). NEW MEXICO - Present in all alfalfa fields checked in Dona Ana County; especially heavy in several fields of seedling alfalfa. (N.M. Coop. Rpt.). ARKANSAS - Numbers declined slightly to about 5 per square foot in northwest. (Ark. Ins. Sur.).

COWPEA APHID (Aphis craccivora) - ARIZONA - Populations persist in alfalfa in the Gila Valley, Yuma County. Three infestations found in the Buckeye area, Maricopa County. (Ariz. Coop. Sur.).

FRUIT INSECTS

WOOLLY APPLE APHID (Eriosoma lanigerum) - ALABAMA - Serious infestations observed on roots of apple trees in Cullman, Cleburne and Coosa Counties. (Bagby, Thomas).

SAN JOSE SCALE (Aspidiotus perniciosus) - FLORIDA - All stages severe on 90 percent of 2,500 pear trees in nursery at Glen St. Mary, Baker County. (Collins, Jan. 21).

TWIG PRUNER (Elaphidion villosum) - TEXAS - Probably this species causing considerable damage to pecans in Williamson County. (Luker).

WALNUT SCALE (*Aspidiotus juglansregiae*) - CALIFORNIA - Adults heavy locally on walnuts in Rubidoux, Riverside County. (Cal. Coop. Rpt.).

COTTONY-CUSHION SCALE (*Icerya purchasi*) - CALIFORNIA - Medium locally on citrus in Arroyo Grande, San Luis Obispo County. (Cal. Coop. Rpt.).

BROWN SOFT SCALE (*Coccus hesperidum*) - CALIFORNIA - Locally heavy on grapefruit trees in Gridley, Butte County. (Cal. Coop. Rpt.).

CALIFORNIA RED SCALE (*Aonidiella aurantii*) - CALIFORNIA - Medium locally on orange in Arroyo Grande, San Luis Obispo County. (Cal. Coop. Rpt.).

WHITE PEACH SCALE (*Pseudaulacaspis pentagona*) - FLORIDA - Severe on stems of 2 persimmon plants in nursery in Apopka, Orange County. (Musgrove, Jan. 22).

WESTERN FLOWER THRIPS (*Frankliniella occidentalis*) - CALIFORNIA - Light to medium on Mineola tangerine fruit in Pauma Valley, San Diego County. (Cal. Coop. Rpt.).

TRUCK CROP INSECTS

TOMATO FRUITWORM (*Heliothis zea*) - ARIZONA - Scattered infestations in lettuce fields require controls in Maricopa County. (Ariz. Coop. Sur.).

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) - ALABAMA - Heavy on turnips in Mobile County. (Wallace, Boswell, Seibels, Jan. 27). CALIFORNIA - Larvae medium on Chinese cabbage in Reedly, Fresno County. (Cal. Coop. Rpt.).

A WEEVIL (*Smicronyx commixtus*) - WASHINGTON - Five adults swept from sugar beets April 20, 1964, at Kittitas, Kittitas County. This is a new State record and the second record from sugar beets. Det. by D. M. Anderson. (Landis).

SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata howardi*) - ALABAMA - Moderate on turnips in Mobile County. (Wallace, Boswell, Seibels, Jan. 27).

FULLER ROSE BEETLE (*Pantomorus godmani*) - ALABAMA - Moderate on turnips in Mobile County. (Wallace, Boswell, Seibels, Jan. 27).

DARKLING BEETLES - TEXAS - Moderate local populations damaged watermelon seedlings in Hidalgo County. (Texas Coop. Rpt., Page).

CABBAGE LOOPER (*Trichoplusia ni*) - ARIZONA - Larvae on lettuce required controls in Maricopa and Yuma Counties. (Ariz. Coop. Sur.).

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - Increasing and requiring some treatment in lettuce in Yuma County. (Ariz. Coop. Sur.).

CABBAGE APHID (*Brevicoryne brassicae*) - GEORGIA - Light on cabbage in southern section. (Johnson).

MELON APHID (*Aphis gossypii*) - TEXAS - Moderate, local populations damaged watermelon seedlings in Hidalgo County. (Texas Coop. Rpt., Page).

AN APHID (*Acyrthosiphon barri*) - ARIZONA - Becoming a serious problem and difficult to control in heads of lettuce in Yuma County. (Ariz. Coop. Sur.).

STRAWBERRY APHID (*Pentatrichopus fragaefolii*) - CALIFORNIA - Adults light on strawberries in Redlands, San Bernardino County. (Cal. Coop. Rpt.).

LYGUS BUGS (*Lygus* spp.) - ALABAMA - Large numbers occurred on turnips in Mobile County. (Wallace, Boswell, Seibels, Jan. 27).

BEET LEAFHOPPER (*Circulifer tenellus*) - CALIFORNIA - Selected breeding ground areas on western side of San Joaquin Valley sprayed January 11-21; 9,020 acres treated in San Joaquin, Merced and Fresno Counties. (Cal. Coop. Rpt.).

THRIPS - NEW MEXICO - Beginning to build up in onion fields; average 2-6 on small plants in Dona Ana County. (N.M. Coop. Rpt.).

TOBACCO INSECTS

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) - GEORGIA - Light to moderate damage to tobacco in plant beds noted in southern section. (Johnson).

COTTON INSECTS

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - TENNESSEE - Of 24 larvae collected in cotton blooms, 6 determined as *O. nubilalis*. Remaining 18 larvae determined as *Heliothis zea*. Collections made at Knoxville, Knox County, September 14, 1964, by W. W. Stanley. (Stanley).

PINK BOLLWORM (*Pectinophora gossypiella*) - FLORIDA - Larvae taken on wild cotton (*Gossypium hirsutum*) at 2 locations in Everglades National Park at Cape Sable, Monroe County. (Weaver, Jan 22, 27).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

CUTWORMS (*Feltia* spp.) - ARIZONA - Heavy on lawns and flower buds in Phoenix area, Maricopa County. (Ariz. Coop. Sur.).

APHIDS - FLORIDA - All stages of *Aphis gossypii* (cotton aphid) severe on leaves of aphelandra in nursery at Apopka, Orange County. (Musgrove, Jan. 20). NEW MEXICO - *Cinara tujafilina* increasing on arborvitae in Las Cruces area, Dona Ana County; Belen and Los Lunas, Valencia County; and Albuquerque, Bernalillo County. (N.M. Coop. Rpt.). CALIFORNIA - *Aleophagus myersi* medium on succulent nursery stock locally in Vista, San Diego County. (Cal. Coop. Rpt.).

COCCIDS - FLORIDA - *Pseudococcus citri* (citrus mealybug) light on leaves of bird-of-Paradise at nursery in Winter Haven, Polk County. (Tyner, Norton, Jan. 20). *P. adonidum* (long-tailed mealybug) adults severe on *Podocarpus maki* at Hialeah, Dade County. (Brown, Jan. 19). *Coccus hesperidum* (brown soft scale), *Saissetia hemisphaerica* (hemispherical scale) and *S. nigra* taken on stem of false-mallow (*Malvastrum coromandelianum*) at Hialeah. (Stegmaier, Jan. 22). These are all new host records for Florida Division of Plant Industry. (Fla. Coop. Sur.). *Phenacaspis cockerelli* (an armored scale) moderate to severe on leaves of *Aucuba* sp. in nursery at Eustis, Lake County, (Holley, Bentley, Jan 22); adults light on leaves of oleander in nursery at Fairvilla, Orange County, (Kipp, Jan 25). *Fiorinia theae* (tea scale) moderate to severe on leaves of *Camellia* sp. in nursery at Eustis (Bentley, Holley, Jan. 22); moderate on leaves of Burford holly in nursery at Fairvilla (Kipp, Jan. 25); all stages severe on leaves of holly in nursery at Eustis (Fatic, Jan. 27). *Aspidiotus destructor* (coconut scale) adults on 20 inspected Japanese privet plants in Miami, Dade County, (Schuyt, Jan. 22); moderate on screw-pine (*Pandanus veitchii*) in nursery at Apopka, Orange County (Musgrove, Jan 25). *Saissetia hemisphaerica* severe on stem and fronds of undetermined tree fern in nursery at Plymouth, Orange County. (Musgrove, Jan. 21). Adults of *Toumeyella liriodendri* (tuliptree scale) severe on stem and leaves of banana-shrub (*Michelia fuscata*) at Longwood, Seminole County. (McLeod, Jan 28). *Ceroplastes floridensis* (Florida wax scale) moderate to severe on stems and leaves of 32 schefflera plants in nursery at Rockledge, Brevard County. (Levan, Jan 22). *Howardia biclavis* (mining scale) severe on stems of 200 gardenia plants in nursery at Miami, Dade County. (Herrmann, Jan. 21). *Icerya purchasi* (cottony-cushion scale) moderate to severe on leaves and stem of 16 pittosporum plants in nursery at

Eustis. (Holley, Bentley, Jan. 22). All stages of *Pseudaulacaspis pentagona* (white peach scale) severe on stems of 2 mulberry plants in nursery at Glen St. Mary, Baker County. (Collins, Jan. 22). *Lepidosaphes maskelli* (an armored scale) moderate on foliage of 90 percent of 10,000 California juniper plants in nursery at Dover, Hillsborough County. (Simmons, Jan. 21). OKLAHOMA - *Unaspis euonymi* (euonymus scale) heavy on euonymus in Kiowa County. (Okla. Coop. Sur.). CALIFORNIA - *Chorizococcus lounsburyi* (a mealybug) medium on lilies locally in Menlo Park, San Mateo County. (Cal. Coop. Rpt.).

PEAR PSYLLA (*Psylla pyricola*) - CALIFORNIA - Nymphs heavy on ornamental pear in Palo Alto, Santa Clara County. (Cal. Coop. Rpt.).

SPIDER MITES (*Tetranychus* spp.) - ALABAMA - General populations damaging on azaleas and camellias in Mobile County; also infesting laurelcherry, roses and other shrubs. (Seibels, Hagler, Wallace, Boswell, et al.).

BULB MITE (*Rhizoglyphus echinopus*) - FLORIDA - Adults and nymphs numerous in soil of Easter lilies at Apopka, Orange County. (Mosteller, Jan. 25).

AN ERIOPHYID MITE (*Paraphytoptus caliplucheae*) - CALIFORNIA - Medium in trunks of *Pluchea sericea* locally in Bard, Imperial County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

COMMON CATTLE GRUB (*Hypoderma lineatum*) - OKLAHOMA - Counts ranged 0-39 (averaged 14) on yearling steers and 0-13 (averaged 4) on cows in Payne and Noble Counties; moderate numbers noted on cattle in Pittsburg and Kiowa Counties. (Okla. Coop. Sur.).

MOSQUITOES - FLORIDA - Populations very low in Cape Sable area, Monroe County. (Fla. Coop. Sur.).

CATTLE LICE - OKLAHOMA - *Linognathus vituli* (long-nosed cattle louse) noted on yearling steers in Payne and Noble Counties; averaged 2 per hair part. Unspecified species heavy on cattle in Pushmataha County and moderate in Pittsburg and Kiowa Counties. (Okla. Coop. Sur.). UTAH - Approximately 50 percent of cattle in western Box Elder County have been treated since fall of 1964. (Knowlton, Finch).

HOG LOUSE (*Haematopinus suis*) - OKLAHOMA - Moderate populations noted on hogs in Pittsburg County. (Okla. Coop. Sur.).

TICKS - OKLAHOMA - *Amblyomma americanum* (lone star tick) light on cattle in Pushmataha County. Small numbers of *Dermacentor variabilis* (American dog tick) present on dogs and cattle in Payne County. (Okla. Coop. Sur.). PENNSYLVANIA - *Rhipicephalus sanguineus* (brown dog tick) noted in homes in Montgomery County during January. (Gesell).

A BROWN SPIDER (*Loxosceles reclusa*) - OKLAHOMA - A problem in homes in Oklahoma County. (Okla. Coop. Sur.).

HOUSEHOLD AND STRUCTURAL INSECTS

BLACK CARPET BEETLE (*Attagenus piceus*) - MARYLAND - Larvae noted in home at Takoma Park, Montgomery County. (U. Md., Ent. Dept.).

CIGARETTE BEETLE (*Lasioderma serricorne*) - ALABAMA - Remains a pantry pest in many homes. (McLain).

RICE WEEVIL (*Sitophilus oryzae*) - PENNSYLVANIA - Present in homes in scattered locations over State. (Udine).

DRIED-FRUIT BEETLE (*Carpophilus hemipterus*) - PENNSYLVANIA - Abundant in kitchen and bedroom of home in Reading, Berks County. (Menusan, Jan. 18).

A CUCUJID BEETLE (*Oryzaephilus mercator*) - CALIFORNIA - Adults heavy in kitchen of home in Santa Barbara, Santa Barbara County. (Cal. Coop. Rpt.).

CERAMBYCID BEETLES (*Callidium* spp.) - PENNSYLVANIA - *C. antennatum* collected in home in Allentown, Lehigh County, January 20; no firewood present. *C. schotti* collected from cedar stake in home at Williamsport, Lycoming County, January 14. (Gesell).

BOXELDER BUG (*Leptocoris trivittatus*) - GEORGIA - Entering homes in Atlanta area. (Johnson).

GERMAN COCKROACH (*Blattella germanica*) - MARYLAND - Troublesome in home at Baltimore. (U. Md., Ent. Dept.).

BENEFICIAL INSECTS

HONEY BEE (*Apis mellifera*) - CALIFORNIA - Colonies are being moved into blooming almond orchards. Blossoming began much earlier than usual in some locations. (Cal. Coop. Rpt.).

CORRECTIONS

CEIR 15(6):76 - Table 2. 1965 Cumulative Cases should read 168, not 150, and Cumulative Ratio should read 130.95, not 146.66

CEIR 15(6):78 - Third paragraph, line 9 - FLASE CHINCH BUG should read FALSE CHINCH BUG.

LIGHT TRAP COLLECTIONS

	Tempera-ture °F.	Precip-itation (inches)	Type of trap *	*Agrotis ipsilon* (black cutworm)	*Carpocapsa pomonella* (codling moth)	*Chorizagrotis auxiliaris* (army cutworm)	*Estigmene acrea* (salt-marsh caterpillar)	*Faronta diffusa* (wheat head armyworm)	*Feltia subterranea* (granulate cutworm)	*Heliothis virescens* (tobacco budworm)	*H. zea* (bollworm, corn earworm, tomato fruitworm)	*Loxostege commixtalis* (alfalfa webworm)	*Loxostege similalis* (garden webworm)	*Loxostege sticticalis* (beet webworm)	*Ostrinia nubilalis* (European corn borer)	*Peridroma saucia* (variegated cutworm)	*Prodenia ornithogalli* (yellow-striped armyworm)	*Protoparce quinquemaculata* (tomato hornworm)	*Protoparce sexta* (tomato hornworm)	*Pseudaletia unipuncta* (armyworm)	*Spodoptera exigua* (beet armyworm)	*Spodoptera frugiperda* (fall armyworm)	*Trichoplusia ni* (cabbage looper)	Crops **
FLORIDA Gainesville 2/2			BL						1											1				
SOUTH CAROLINA Charleston 2/1-7	23-62	1.07	BL	3			0		4	0	0					0	0	0	0	0		0	1	
TEXAS Brownsville 1/27-2/1	43-89	0	5 BL	22			3		69	2	47		23			18	10		1	18		46	52	

* BL = blacklight; I = incandescent; MV = mercury vapor; O = other

** alf. = alfalfa; beet = garden beet and/or sugar beet; cole = cole crops (crucifers); cott. = cotton; FC = field corn; grain = small grains; leg. = legumes (unspecified); lett. = lettuce; pean. = peanut; pepp. = pepper; pot. = potatoes; SC = sweet corn; sol. = solanaceous plants (unspecified); soy. = soybean; TC = truck crops (unspecified or mixed); tob. = tobacco; tom. = tomato.

STATUS OF THE SCREW-WORM (*Cochliomyia hominivorax*) IN THE SOUTHWEST

No screw-worm cases were reported from the Southwestern Eradication Area during the period January 31 - February 6. The Republic of Mexico reported 109 cases: Sonora 78, Tamaulipas 6, Puebla 2, Veracruz 2, Nuevo Leon 7, San Luis Potosi 2, Chihuahua 8 and Coahuila 4. No sterile flies are being released in the United States on the grid basis; therefore, the 2,706,250 sterile flies dispersed in Texas were released over the Nueces River. A total of 39,196,000 sterile flies was released in Mexico.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding weeks in 1963 and 1964 in Southwestern Eradication Area.						
1963	4	128	12	102	33.33	125.49
1964	0	0	27	158	0.00	0.00
1965	0	4	33	320	0.00	1.25
Table 2. Comparison of specimens reported during corresponding weeks and in a corresponding area in 1964 in the United States-Mexico Barrier Zone.*						
1964	0	88	8	50	0.00	176.00
1965	103	323	29	197	355.17	163.95
Table 2A. Mexican portion of Barrier Zone only.						
1964	0	85	0	18	0.00	0.00
1965	103	321	24	122	429.16	263.11

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* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm population in the United States.

(Anim. Dis. Erad. Div.).

SUMMARY OF INSECT CONDITIONS IN SOME COUNTRIES OF THE NEAR EAST AND AFRICA

1964

The five summaries of insect conditions that follow have been submitted in the 1964 Annual Report of the Regional Insect Control Project, with headquarters in Beirut, Lebanon. The first attempt to present information on the more important insect pests of the Near East in the Cooperative Economic Insect Report was made in 1955 following a request from the survey committee of the Entomological Society of America. For the benefit of CEIR readers, it may be well to point out that the Regional Insect Control Project is a cooperative program operated by the Plant Pest Control Division, Agricultural Research Service, in accordance with an agreement signed on February 18, 1954, between the U.S. Department of Agriculture and the International Cooperation Administration (now Agency for International Development). At the present time, a staff of five entomologists is stationed in five countries working with the personnel of the USAID/Missions and Ministries of Agriculture.

The work of the these entomologists is designed to fulfill commitments to the host countires, with respect to the evaluation of locust problems, the demonstration of control practices, development of insect surveys and the training of nationals in methods, procedures and the organization of applied entomology and plant quarantine work. During the last few years, the Ministries of Agriculture have strengthened their Plant Protection organizations. An increased effort has been made to collect, identify and record pest species of economic importance. Firsthand information on foreign pests should serve to familiarize the entomologist and the pesticide industry of the United States with the major pests in the areas reported on. It should lead to better understanding and mutual interest in the entomological problems common to the United States and other nations.

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Summary of Insect Conditions in Ethiopia

Prepared by P. M. Schroeder

Cereal and Forage Insects: A small DESERT LOCUST (*Schistocerca gregaria*) swarm of approximately two acres in size was seen during mid-August. Several days later a swarm of approximately this same size was observed landing in the waters of the Gulf of Aden which apparently marked the end of this swarm. A number of other swarm reports were made, but aerial and ground reconnaissance could not locate them. Solitary forms were reported on the Red Sea coastal plain near Massawa.

NUTGRASS ARMYWORM (*Spodoptera exempta*) was not reported this year. Heavy infestations of unspecified CATERPILLARS fed on sorghum in the Dessie area, with some experimental controls applied. Teff in the Addis Ababa area was severely damaged by unidentified larvae. SUDAN DURRA BUG (*Agonoscelis pubescens*), a LADY BEETLE (*Chnootribia similis*) and a COREID BUG (*Cletus* sp.) were found on corn at Debre Zeit. Corn and sorghum in the Harrar area were heavily infested with an APHID and a CORN STEM BORER. A TEFF STEM SHOOT FLY (*Atherigona hyalinipennis*) was observed in the Harrar area. In the Ginagera area, a LEAFHOPPER (*Tettigoniella cosmopolita*) was heavy on grass. Corn in the Debre Zeit area had light infestations of MAIZE STALK BORER (*Busseola fusca*), a FLEA BEETLE (*Blepharida* sp.), a LYGAEID BUG (*Lygaeus pandurus*), and CORN LEAF APHID (*Rhopalosiphum maidis*).

Coffee Insects: A PENTATOMID (Antestia orbitalis) was light to medium in the Sabatta area. Two and three-year-old coffee trees were severely damaged by a BOSTRICHID BORER (Apate monachus) in the Mesan Tafari area.

Oilseed Insects: Nug in the Ambo-Gheddo area was heavily infested with an unspecified CATERPILLAR, and several other caterpillars were causing minor damage. OLD WORLD BOLLWORM (Heliothis armigera) and TOMATO CATERPILLAR (Prodenia litura) did extensive damage to peanuts on the eastern slopes of Eritrea Province.

Cotton Insects: APHIDS, JASSIDS and a COTTON STAINER (Dysdercus sp.) infested cotton at Tandaho. At the Ghibbie River on the Jimma Road, a BOLLWORM (Heliothis sp.) caused severe damage to cotton.

Fruit Insects: VEDALIA (Rodolia cardinalis) is now successfully established in Ethiopia. LEMON BUTTERFLY (Papilio demoleus) caused defoliation at Debre Zeit and Sabata. A SCARAB fed in orange blossoms and caused considerable damage to rose blossoms. WHITEFLIES were noted on figs and a ROUND HEADED BORER caused considerable damage to young figs at Debre Zeit. An APHID (Toxoptera sp., probably aurantii) and a SAP BEETLE (Carpophilus fumatus) were light on citrus in the Sabata area.

Truck Crop Insects: Squash in the Sabata area was heavily infested with a SOUTH AFRICAN PLANT BUG (Leptoglossus membranaceous), cabbage was moderately infested with larvae of a NOCTUID MOTH (Autographa sp.), CABBAGE APHID (Brevicoryne brassicae), DIAMONDBACK MOTH (Plutella maculipennis) and a FLEA BEETLE (Phyllotreta sp.). Brussel sprouts in Addis Ababa were heavily infested with CABBAGE APHID. In Alemaya, brussel sprouts and cauliflower were infested with a LEAF BEETLE (Monolepta sp.) and a STINK BUG (Eurydema ornatum).

Miscellaneous Insects: A number of flights of a TERMITE (Macrotermes natalensis) occurred in the Addis Ababa area. Hollyhocks were heavily infested by a LYGAEID BUG (Oxycarenus lavaterae) and by LEAF BEETLES (Monolepta sp. and Podagrica sp.). Roses were also infested with Monolepta sp. and in the Addis Ababa area heavy infestations of ROSE APHID (Macrosiphum rosae) were noted. Bread flour in Addis Ababa was commonly contaminated with a DARKLING BEETLE (Tribolium destructor). Larvae of a SATURNIID MOTH (Bunaea alcinoe) defoliated a thorn bush (Balanites aegyptiaca) on the Hazamo Plain of Eritrea Province.

Summary of Insect Conditions in the Republic of the Sudan

Prepared by A. Kaatz

Cereal and Forage Insects: Infestations of a TREE LOCUST (Anacridium melanorhodon melanorhodon) increased during December 1963, reached a peak in January and February 1964, and then tapered off to none for several months. Breeding occurred during the summer rains of July and August in Khartoum, Blue Nile, Kordofan and Darfur Provinces after which the population increased greatly. Successful controls were carried out during January, February and March in all affected areas, and will resume again in November and December on the new brood. It is believed two other unidentified species were present in 1964. Damage was reported to citrus trees along the Blue Nile near Hassaheisa and at several locations in Darfur. Damage was reported to durra fields from 3 separate locations in Kordofan. A MIGRATORY LOCUST (Locusta migratoria migratorioides) was not reported this year. DESERT LOCUST (Schistocerca gregaria) was not found until late September in Wadi Arbaat and Wadi Eit in the Red Sea Hills where small numbers of the solitary phase were widely scattered along dry stream beds. The population may increase somewhat during the winter rains of November and December. The summer breeding range remained free of desert locusts until October, when three small bands were reported near Baiyuda, about fifty miles south of Merowe, and one band near Debba south of Dongola. Control activities were initiated on these bands.

The SUDAN DURRA BUG (Agonoscelis pubescens) population increased greatly over that of 1963 in the Kassala and Blue Nile Provinces. A successful spraying campaign was conducted in Kassala and Gedaref Districts during May, which is the dormant season when this insect is clustered in shady portions of trees. Many bugs were killed in the Dueim District during spraying for a tree locust in January and February. A DURRA BUG (Amaxosana punctata) damaged a number of durra fields in the milk stage in the Gebel Dali District. OLD WORLD BOLLWORM (Heliothis armigera) infested heads of durra in numerous locations in the Gezira during February and March. DURRA APHID (Longiunguis sacchari) were widespread along the White Nile River in late maturing durra. Durra aphid was reported in wheat plots at Khashm El Girba during January and February. Several sprayings were necessary to achieve control. CORN LEAF APHID (Rhopalosiphum maidis) and L. sacchari were reported in durra fields in the Gezira. COTTON APHID (Aphis gossypii) was reported on marginal rows of durra adjacent to cotton. An infestation of MILLIPEDS in durra and dukhn millet were successfully baited in the Dueim District. DURRA STALK BORER (Sesamia cretica) is widespread and found in almost all durra fields. No controls were attempted except at Khashm El Girba and these were not successful. In the Dongola District, where durra is cut and stalks allowed to regrow, 40-60 percent of the crop was seriously damaged. An unidentified CATERPILLAR was reported during August as damaging seedling stage durra in the Gebel Dali District. Various GRASSHOPPERS damaged durra and sesame in Khashm El Girba, Kassala, Dali, Mazoum, and at different locations in Kordofan Province. Grasshoppers damaged peanut fields in Kordofan where 4,000 acres were baited by the cultivators. A SPITTLEBUG was reported on durra in Gederef District during September; up to 15 percent of stalks were infested in a number of fields. An unspecified BEETLE was reported damaging millet in Dueim District during January. Several small fields were destroyed before farmers sprayed. An ARMYWORM (Spodoptera sp.) damaged berseem and lubia bean fields in Kassala before being controlled by spraying; also damaged various berseem fields along the Nile River in Northern Province during January through May where fields were flooded to control the pupal stage. Unspecified ARMYWORMS damaged okra, potatoes and vegetable plots at Khashm El Girba before being controlled by sprays. SPOTTED ALFALFA APHID (Therioaphis maculata) and COWPEA APHID (Aphis craccivora) were serious in many berseem fields in Khartoum Province and along the Blue Nile River to Wad Medani. Aphids are usually kept in check by predators but apparently conditions were not favorable for predator development this season. Many cultivators reported the loss of their stands. Aphids were also reported serious on berseem and broadbeans in Kassala District and at Sinkat where regular spraying controlled them.

BLISTER BEETLES were serious in a number of berseem fields and in Tamarhindi blossoms near Soba during July, and again in September. THRIPS and WHITEFLIES seriously infested about 500 acres of peanuts during September and October at Khashm El Girba. Whiteflies were also reported in lubia beans and safflower plots during January through March at the same location. FLEA BEETLES were reported serious on kenaf trials near Tonj. An unidentified STEM BORER was reported present in wheat fields during February and March in the Northern Province.

Fruit Insects: Infestations of CITRUS LEAF MINER (Phyllocnistis citrella) were general in about 70 percent of citrus orchards along the Nile River in the Northern Province, and in Blue Nile, Khartoum, and Kassala Provinces. Controls were conducted only in government orchards. PARLATORIA DATE SCALE (Parlatoria blanchardi) and a TERMITE (Odontotermes sudanensis) are a major problem on date palms in the Northern Province. Controls were carried out only along the southern reaches of the Nile River in 1964. None were conducted in the north as this region is being flooded out due to rising of the Nile River by the High Dam. Infestations of two ARMORED SCALES (*Lepidosaphes tapleyi* and *Parlatoria pseudaspidiotus*) varied from severe to light in practically all mango orchards. Some controls were conducted in the Northern, Kassala and Blue Nile Provinces. A SPIDER MITE was reported on citrus in a number of locations in Shendi District, in Khartoum and Kassala Provinces. A number of orchards in each province were sprayed. CITRUS RED MITE (*Panonychus citri*) was reported in Khashm El Girba citrus plantings and sprayed several times with very good results. A FRUIT FLY (*Pardalaspis quinaria*) infested guava fruit along the Nile River from Khartoum to Berber. Control work was limited to Shendi and Atbara Districts. HIBISCUS MEALYBUG (*"Phenacoccus" hirsutus*) was reported on guava and mango trees in Khartoum and Blue Nile Provinces and in the Nuba Mountains District. A number of orchards were sprayed. Infestations of a PAPILIONID BUTTERFLY (*Papilio demoleus demodocus*) were numerous on lemon trees in Khartoum and Kassala Provinces and in the Nuba Mountains. Few controls other than picking were reported. SCALE INSECTS were reported on olive trees in Kassala District, and on citrus in Atbara and Kassala Districts with a number of orchards in each district being sprayed. RED ANTS seriously infested mango and citrus trees at several locations in Khartoum and Kassala Provinces and were controlled by spraying. WHITEFLIES were reported infesting orange blossoms in great numbers in orchards near Atbara. SCALE INSECTS and TERMITES infesting fig trees and grape vines at the Sinkat experimental plots were controlled by several sprayings. A FRUIT FLY (*Carpomyia incompleta*) was found in Indian "nebbak" fruit trees near Butri during the early part of the year.

Vegetable Insects: OLD WORLD BOLLWORM (*Heliothis armigera*) on tomato and eggplant was the most serious pest in 1964. Favorable conditions enabled the species to be active all year in most of central Sudan; 5-75 percent of the crop in fields along the Blue Nile were lost, and 100 percent of the tomato fields were infested. Only the most progressive cultivators conducted spraying operations. ONION THRIPS (*Thrips tabaci*) was again serious from January to April in most onion fields along the Nile River from Khartoum to Atbara, and at Bara in Kordofan Province. Many cultivators sprayed to control this insect. LESSER PUMPKIN FLY (*Dacus ciliatus*) and *Dacus* spp. were a serious threat to all melons and cucurbits. In Khartoum District, over 1,000 acres were seriously affected and crop losses ranged 5-70 percent or more during the season. Cucumbers and squash crops were not seriously attacked. A MUSCID FLY (*Atherigona orientalis*) attacked melons during January and February in Khartoum District gardens. Various APHIDS infested melons and other cucurbits throughout 1964. Early in the year, melon fields at Soba were sprayed after several fields had been severely damaged. Aphids were reported on eggplant, okra, cucumbers and melons in the Northern Province during May and on eggplant at Arbaat Wells from January to April. *Aphis laburni* was reported on broad beans at Kassala and sprayed during February and March. BLISTER BEETLES (*Mylabris* sp., *Epicauta* sp. and *Coryna* sp.) were widespread and damaged okra blossoms in Kordofan Province during January and February and again in September. They were also reported on vegetables in Darfur Province, in most gardens around Soba and Khartoum during August and September, and in all flower gardens in the Nuba Mountains. TWELVE-SPOTTED MELON BEETLE (*Epilachna chrysomelina*) was serious in melon fields at Sennar, in Darfur Province wherever cucurbits were grown and in most gardens along the Nile from Khartoum to Atbara. RED PUMPKIN BEETLE (*Raphidopalpa foveicollis*), usually a serious pest on bean and cucurbit crops, was not important this year. A STINK BUG (*Aspongopus viduatus*) occurred in practically all melon gardens in Kordofan Province and was serious in several localities. SOUTHERN GREEN STINK BUG (*Nezara viridula*) was found on melons, other cucurbits and on tomatoes in Khartoum Province during September. WHITEFLIES and LEAFHOPPERS infested tomatoes, eggplants, okra and cucurbits in most areas but were not serious. FLEA BEETLES also occurred in all gardens along the Nile River in Khartoum Province. BAGRADA BUG (*Bagrada hilaris*) was reported on okra in the Nuba Mountains, but serious at only a few locations. An ARMYWORM (*Spodoptera* sp.) was serious on all vegetables in Sennar District early in the year; destroyed 30 acres of tomatoes near Soba before being controlled. It was present in most gardens at Khashm El Girba where regular spraying was conducted. THRIPS occurred on almost all crops with flowers in the Bara area during August and September. Other insects noted were RED ANTS on tomato plants at Kassala, which were sprayed and controlled; were also reported in vegetable gardens at Sinkat. CUTWORMS occurred on vegetables in the Kassala District and NEMATODES in tomato and crucifer plants at Sennar during February and March; and TERMITES, GRASSHOPPERS and LOOPERS were reported at various places in Kassala and along the Blue Nile. A STINK BUG (Piezodorus lituratus) was reported in many okra fields in Kosti and Sennar Districts.

Cotton Insects: COTTON JASSID (Empoasca lybica) was widespread and general in all cotton fields and the most important cotton insect in the Sudan. At Zeidab, approximately 6,000 acres of early cotton were sprayed in July. In the Tokar Delta, density of infestations varied in different fields; infestations were severe in several fields and no controls were applied. Cotton jassid was reported in Gash Delta in September and October. In the Blue and White Nile regions, infestations began building up early in August and spraying was started in late September. In the Gezira, infestations began building up early in September with densities varying from field to field. General spraying was begun by the end of September. The population in the Gezira was denser in the south than in the north, which is the reverse of the usual trend. In general, infestations were lighter than during 1963. By the end of the cotton-growing season it is expected that an aggregate of over 1,000 acres will be sprayed for cotton jassid, WHITEFLIES and BOLLWORMS. SWEETPOTATO WHITEFLY (Bemisia tabaci) was second in importance and as widespread as cotton jassid and controls were simultaneous. Population densities varied from district to district, but in general were much lighter in all areas than in 1963. Heaviest populations occurred in the southern part of the Gezira, south of Kosti, and south of Sennar. A COTTON THRIPS (Caliothrips fumipennis) was present in many of the Blue and White Nile schemes. Slight damage to early cotton occurred in the Dueim District in September. Spotted infestations were reported from Gedared District and the Gash Delta. A FLEA BEETLE (Podagrica puncticollis) occurred in field edges early in September near Singha, Sennar, Kosti and Dueim. Some damage occurred to early planted fields in Dueim and Sennar Districts. COTTON APHID (Aphis gossypii), usually a late season pest, occurred quite early this season. Populations appeared in schemes south of Kosti during cool weather in September and built up to where spraying was necessary. Spraying was also reported from different locations in neighboring districts by the first week in October. COTTON STAINERS (Dysdercus spp.) were more numerous in the Nuba Mountains than for several years. Infestations were light but extensive. A concentrated spray program was conducted during July and August and part of September. This is the dormant season when the insects collect in clusters on certain trees. No reports were received from Equatoria where this insect is also present. A WEEVIL (Odontopus sp.) was present along with cotton stainers in the Nuba Mountains and was sprayed at the same time.

EGYPTIAN COTTONWORM (Prodenia litura) was present in early September in Kosti and Sennar Districts, but less numerous than last season. OLD WORLD BOLLWORM (Heliothis armigera), due to conditions favorable for development, including many host plants during the winter, attained major importance for the first time. Infestations along the White Nile River from Dueim to south of Kosti, along the Blue Nile River in the Sennar District, and in parts of the Gezira, caused the loss of most of the first blooms in early planted cotton. Infestations were general, but varied in density from area to area. Most of the second spraying of cotton was to control this pest. A RED BOLLWORM (Diparopsis watersi) was serious in the Nuba Mountains where it was a major pest and infested up to 25 percent of cotton bolls. All government fields were sprayed. It was present in the Gash Delta and at Khashm El Girba but was not serious, and occurred in schemes south of Sennar and Kosti and in Gedared District. Infestations are increasing in numbers each season. SPINY BOLLWORM (Earias insulana) was serious only in the

Tokar Delta during January and February; up to 32 percent of cotton bolls were infested. No controls were applied. A few could always be found in most other areas. Most numerous reports were in the Dueim District and in the southern reaches of the Blue and White Nile. Very little was reported in the Gezira. PINK BOLLWORM (*Pectinophora gossypiella*) is controlled each season by a cotton residue cleanup campaign and by either heat treatment or fumigation of cotton seed. They were reported in localized spots in all regions. No reports were received from Equatoria where it is usually the major pest of cotton. A WEEVIL (*Alcidodes haemopterus*) damaged blooms of late cotton in three schemes in the Singha area during February and March. A number of LEAF FEEDERS and PLANT BUGS were reported in Sennar, Kosti and southern Gezira during the season. Populations were very spotted and varied from field to field. NOCTUID MOTHS reported were *Cosmophila flava*, *Xanthodes graellsii* and *Laphygma* spp. PLANT BUGS included *Campylomma angustula*, *Creontiades pallidus*, *Cyrtorhinus levidipennis*, *Megacoelum scutellare* *Taylorilygus vosseleri*, *Cyrtopeltis tenuis*, *Deraeocoris* sp. which may be predaceous in other Hemiptera, and *Stenotus* sp. which may have migrated from nearby grasses. COTTONSEED BUG (*Oxycarenus hyalinipennis*) was again present in all old stands of cotton in the breeding plots at Shambat. COTTON STEM BORER (*Sphenoptera gossypii*) caused only slight damage in the Gash Delta. TERMITES and GRASSHOPPERS were reported from a few localities in the Kassala Province.

Stored-Product Insects: KHAPRA BEETLE (*Trogoderma granarium*), RICE WEEVIL (*Sitophilus oryzae*), LESSER GRAIN BORER (*Rhyzopertha dominica*), RICE MOTH (*Corcyra cephalonica*) and ANGOUMOIS GRAIN MOTH (*Sitotroga cerealella*) occur in most older storehouses in the Sudan, especially in Port Sudan area where they are major pests. CONFUSED FLOUR BEETLE (*Tribolium confusum*) and RED FLOUR BEETLE (*T. castaneum*) are considered major pests due to the very great numbers in most storehouses. MERCHANT GRAIN BEETLE (*Oryzaephilus mercator*) was found in a number of shipments of wheat products leaving Port Sudan. MEDITERRANEAN FLOUR MOTH (*Anagasta kuehniella*) was present in many storehouses at Port Sudan. PINK SCAVENGER CATERPILLAR (*Sathrobrota rileyi*) and a SAP BEETLE (*Carpophilus* sp.) were reported to have been found in a shipload of sesame seeds from Port Sudan. ALMOND MOTH (*Cadra cautella*) infested stored dates at Wadi Halfa and all dates leaving the port were fumigated during the season. A BRUCHID (*Bruchidius algiricus*) was found in broadbeans in a number of storehouses in Khartoum North. Bruchids are usually present in most stores of sunt pods. A GROUNDNUT BORER (*Caryedon gonagra*) was found in peanuts stored in a Port Sudan decorticating plant. Other insects reported in stored products were CADELLE (*Tenebroides mauritanicus*), CIGARETTE BEETLE (*Lasioderma serricorne*), SILVERFISH and COCKROACHES. PINK BOLLWORM (*Pectinophora gossypiella*) larvae were found in several shipments of cotton seed at Port Sudan.

Castor-bean Insects: The Gash Delta had no serious CATERPILLAR problems other than a few CUTWORMS early in January which were sprayed. A SPIDER MITE (*Eutetranychus orientalis*) was found in two late sown fields. A BLACK APHID was numerous in several fields of the Gash. In the Kassala District, unspecified ARMYWORM larvae were found in experimental plots and sprayed. In the Gedaref District a FLEA BEETLE was severe in one variety trial, while few or none were found in the other varieties. GRASSHOPPERS, WHITEFLIES, LEAFHOPPERS, TERMITES and a STEM BORER (*Sphenoptera* sp.) were present.

Summary of Insect Conditions in Turkey

Prepared by F. M. Philips

Cereal and Forage Insects: During 1964, over 100,000 acres of small grain were treated to control a PENTATOMID (*Aelia* sp.) in central Anatolia. For the third consecutive year SENN PEST (*Eurygaster integriceps*) was at an extremely low population level with only about 1,200 acres of wheat requiring treatment in the areas east of Diyarbakir. A SCARAB (Anisoplia sp.) was moderately damaging to small grains throughout Turkey, requiring treatment of approximately 80,000 acres. A GROUND BEETLE (Zabrus sp.) caused extremely heavy damage to wheat on the central plateau, the same area where heavy damage has occurred in previous years. CEREAL LEAF MINER (Syringopais temperatella) caused localized heavy damage to wheat in central Anatolia, the Aegean coast and the Black Sea coast. A FLEA BEETLE (Phyllotreta sp.) caused isolated damage estimated at 60 percent to wheat in western Anatolia. BARLEY APHID (Cuernavaca noxious) was practically non-existent on wheat this year. Attempts have been made to discover the natural enemies of this insect without positive results. CEREAL LEAF BEETLE (Oulema melanopa) caused light to moderate damage to small grains in the Black Sea area. There was no activity in Turkey by DESERT LOCUST (Schistocerca gregaria) this year. A MIGRATORY LOCUST (Locusta migratoria migratorioides), ITALIAN LOCUST (Calliptamus italicus) and MOROCCAN LOCUST (Dociostaurus maroccanus) caused light damage to grains in southeastern Turkey. ALFALFA WEEVIL (Hypera postica) caused heavy damage to alfalfa in the area east of Kayseri, Elazig and Erzincan. In fields surveyed, it was rare to find a terminal that did not contain a larva.

Fruit Insects: An ERMINE MOTH (Yponomeuta sp.) caused extremely heavy damage to apple, plum and apricot trees throughout Turkey. Many trees were completely defoliated. Over 5,000,000 trees were treated in 1964. PEAR LACE BUG (Stephanitis pyri) caused light to moderate damage on apples throughout central Turkey. Over 120,000 trees were treated. CODLING MOTH (Carpocapsa pomonella) was heavy throughout Turkey this year, causing as high as 100 percent damage; however, when treatments were made, control ranged 50-95 percent effective. Over 500,000 trees were treated. SPIDER MITES (Tetranychus spp.) caused moderate damage to apples and pears in the northern half of Anatolia. CHERRY FRUIT FLY (Rhagoletis cerasi) infested approximately 8 percent of the sweet cherry crop in the mountainous areas around Corum. WHITE PEACH SCALE (Pseudaulacaspis pentagona) infested mulberry in the Black Sea area. FIG WAX SCALE (Ceroplastes rusci) infested fig trees in Hatay, Aydin and Denizli. Over 10,000 apple trees were treated in the Samsun area for SAN JOSE SCALE (Aspidiotus perniciosus). CITRUS RUST MITE (Phyllocoptruta oleivora) heavily infested citrus plantings throughout citrus-producing areas of Turkey. An ARMORED SCALE (Aonidiella sp.) was heavy on citrus in Icel, Adana and Antalya. MEDITERRANEAN FRUIT FLY (Ceratitis capitata) caused approximately 10 percent loss of citrus in the Icel, Adana and Antalya areas. An isolated infestation was discovered in Civril County of Denizli Province on Hinap (a plant similar to Russian-olive). OLIVE MOTH (Prays oleellus) caused approximately 15 percent loss to the olive crop in the Marmara and Aegean areas. OLIVE FRUIT FLY (Dacus oleae) caused heavy damage in Canakhale and Balikesir with only light to moderate damage reported in the remainder of the Aegean area. OLIVE PSYLLID (Euphyllura olivina) was light in the Adana, Gazientep, Hatay, and Maras regions. A WEEVIL (Rhynchites ruber) infested olives in the Mediterranean and Marmara Sea areas. A NUT WEEVIL (Curculio nucum) caused approximately 3 percent loss to the hazel nut crop along the Black Sea.

Truck Crop and Vegetable Insects: BALUCHISTAN MELON FLY (Myiopardalis pardalina) caused isolated extensive damage to melons in eastern Turkey. TWELVE-SPOTTED MELON BEETLE (Epilachna chrysomelina) infested melons near Siirt in southeastern Turkey. COLORADO POTATO BEETLE (Leptinotarsa decemlineata) spread further into European Turkey around Edirne. The preferred host appears to be eggplant. Larvae of LARGE WHITE BUTTERFLY (Pieris brassicae) caused economic damage to cabbage in northeastern Turkey. A MOLE CRICKET (Gryllotalpa sp.) caused light to moderate damage to vegetables throughout Turkey.

Cotton Insects: OLD WORLD BOLLWORM (Heliothis armigera) caused moderate to heavy damage to cotton in the Adana Plains region. A CUTWORM (Agrotis sp.) necessitated replanting of many fields of cotton in the Aegean area. EGYPTIAN COTTONWORM

(Prodenia litura) lightly infested cotton in Adana and Antalya. Over 100,000 acres were treated. SPIDER MITES (Tetranychus spp.) caused economic damage to cotton on the southern coast. BEET ARMYWORM (Spodoptera exigua) caused some damage to cotton in Antalya and Balikesir. SPINY BOLLWORM (Earias insulana) caused light damage to cotton in Antalya, Adana and Hatay Provinces.

Stored-Product Insects: KHAPRA BEETLE (Trogoderma granarium) infested most grain storage facilities in southern Turkey.

Summary of Insect Conditions in Iran

Prepared by S. W. Wilson

Cereal and Forage Insects: A single observation of DESERT LOCUST (Schistocerca gregaria) was reported in the Jiroft area. This small swarm was red in color and covered about 50 hectares in area. Chemical control was applied and the swarm was destroyed. MOROCCAN LOCUST (Dociostaurus maroccanus) occurred over large areas in the Moghan and Kermanshah areas. Severe damage necessitated controls on 70,875 acres. Dociostaurus sp. and Calliptamus sp. were numerous in Mazandaran, Kermanshah, Loristan, Kurdestan and Arak, necessitating large scale controls. Extensive control programs were conducted against SENN PEST (Eurygaster integriceps) in Tehran, Isfahan, Shiraz, Kermanshah, Hamadan, and Kurdestan areas. A total of 80,500 acres were controlled by chemical application and 281 acres by biological control. Rice fields in Guilan Ostan had an infestation of ARMYWORM (Pseudaletia unipuncta). Chemical control was applied immediately, thus limiting damage. A STINK BUG (Dolycoris penicillatus) caused light damage to rice fields in Fars Ostan. CEREAL LEAF MINER (Syringopais temperatella) caused moderate damage to wheat in Fars and Khuzestan Ostans. A NEMATODE (Anguina tritici) occurred in the Bandar Abbas area causing severe damage to wheat. Wheat in the north and northeastern Ostans was attacked by a GROUND BEETLE (Zabrus morio). Severe damage occurred in the Moghan plain where up to 80 percent of some wheat fields was destroyed. ALFALFA WEEVIL (Hypera postica) was very severe in all alfalfa-producing areas. A PIERID BUTTERFLY (Colias sp.) caused severe damage in central and north central Ostans. BEET ARMYWORM (Spodoptera exigua) caused severe damage to alfalfa in the central and northern Ostans. In Khuzestan, alfalfa was severely damaged by TOMATO CATERPILLAR (Prodenia litura). SILVER-Y MOTH (Autographa gamma) caused light damage throughout alfalfa-producing areas. In the northern Ostans, PEA LEAF WEEVIL (Sitona lineata) caused minor damage to alfalfa.

Vegetable Insects: Severe infestations of BEET ARMYWORM (Spodoptera exigua) occurred throughout the sugar-beet producing area. A total of 45,000 acres were sprayed. BEAN APHID (Aphis fabae) occurred in most sugar-beet producing areas, but caused only limited damage. In the Darab Valley, SPIDER MITES caused severe damage to sugar beets. A SUGAR-BEET CROWN BORER (Gnorimoschema ocellatella) caused moderate damage to sugar beets in the Karaj and Fars areas.

Cotton Insects: OLD WORLD BOLLWORM (Heliothis armigera) infestations were moderate in Gorgan and Mazanderan Ostans. Widespread chemical controls were applied. BEET ARMYWORM (Spodoptera exigua) was very severe on cotton in Gorgan Ostan. A total of 20,250 acres of cotton was sprayed for control of this pest. Cotton fields in the Darab Valley were severely infested with SPINY BOLLWORM (Earias insulana); control measures were applied to 27,000 acres in this area. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) occurred in moderate numbers in Mazanderan and Gorgan Ostans. Limited areas of severe infestations of TOMATO CATERPILLAR (Prodenia litura) on cotton were found in Khuzestan Ostan.

Deciduous Fruit Insects: OYSTERSHELL SCALE (Lepidosaphes ulmi) was severe on apple trees in the Tehran area. Apple, cherry, pear and peach trees were moderately infested with OLIVE SCALE (Parlatoria oleae) in Tehran, Khorasan and the Meshed areas. ERMINE MOTH (Yponomeuta padella) severely defoliated apple and plum trees in Azerbaijan, Khorasan and Tehran Ostans. SHOT-HOLE BORER (Scolytus rugulosus) was severe on apple, cherry, peach, plum, apricot and almond trees in Tehran and Isfahan Ostans. LEOPARD MOTH (Zeuzera pyrina) occurred in severe numbers in Tehran Ostan.

Citrus Insects: General drought conditions and a severe winter resulted in decreased populations of SCALE INSECTS. PURPLE SCALE (Lepidosaphes beckii), BLACK PARLATORIA SCALE (Parlatoria zizyphus), and YELLOW SCALE (Aonidiella citrina) were light in the Caspian Sea area. DICTYOSPERMUM SCALE (Chrysomphalus dictyospermi) occurred in heavier populations, but was of no large-scale importance. COTTONY-CUSHION SCALE (Icerya purchasi) was controlled by a predatory LADY BEETLE (Rhizobius debilis). TEXAS CITRUS MITE (Eutetranychus banksi) was noted in Minab, Jahrom, Shabankereh and Ahwaz. Severe reduction of fruit yield was widespread.

Nut Insects: PISTACHIO LEAFHOPPER (Idiocerus stali) caused moderate damage to pistachio trees in the Kerman-Ghazvin area. In Damgan, Kerman and Ghazvin area, PISTACHIO NUT BORER (Eurytoma plotnikovi) caused some damage to pistachios. ALMOND NUT BORER (Eurytoma amygdali) infestations were heavy, resulting in severe damage to almond trees in Azerbaijan Ostan. Controls for all pests of pistachio were applied to an estimated 456,000 trees.

Tobacco Insects: OLD WORLD BOLLWORM (Heliothis armigera) populations were light in Guilan and Mazanderan Ostans.

Oilseed Crops: In Khuzestan, heavy infestations of SESAME LEAFHOPPER (Circulifer opacipennis) resulted in severe economic damage to the sesame crop.

Stored-Products Insects: The Government of Iran estimated an overall loss of 10 percent of all stored agricultural products due to insects. Loss was totaled at $66,000,000. Among the most important pests were: CONFUSED FLOUR BEETLE (Tribolium confusum), GRANARY WEEVIL (Sitophilus granarius), RICE WEEVIL (Sitophilus oryzae), KHAPRA BEETLE (Trogoderma granarium) and RED FLOUR BEETLE (Tribolium castaneum).

Summary of Insect Conditions in Afghanistan

Prepared by E. R. Millet

Cereal and Forage Insects: There was no breeding or invasions of DESERT LOCUST (Schistocerca gregaria) in Afghanistan during 1964. GRASSHOPPERS (Dociostaurus sp. and Calliptamus sp.) were numerous in the vicinity of Jalalabad and Sarobi in the eastern part of Afghanistan, and at Herat in the west. Some areas were sprayed for these pests. The normal ITALIAN LOCUST (Calliptamus italicus) and MOROCCAN LOCUST (Dociostaurus maroccanus) campaign controlled nymphs and adults on an estimated 28,000 acres in the northern provinces during the spring and summer months. CORN GROUND BEETLE (Zabrus tenebrioides) was reported for the first time in Afghanistan in April. It was found damaging an estimated 5,000 acres of wheat at Chari-i-Kar, 40 miles north of Kabul, and at Ghazni, 95 miles south of Kabul. Damage is done by the larvae feeding on the roots and lower stems.

A comprehensive survey for SENN PEST (*Eurygaster integriceps*) in Maimana Province during late April and early May revealed an extremely light infestation. A total of 5,214 sweeps in 168 locations produced only two adult specimens. IMPORTED CABBAGEWORM (*Pieris rapae*) was heavy on alfalfa plantings in the Helmand Valley. BEAN BUTTERFLY (*Lampides boeticus*) caused considerable damage to alfalfa in the Helmand Valley.

Fruit Insects: Numerous infestations of BLACK-VEINED WHITE BUTTERFLY (*Aporia crataegi*) were reported from Shebarghan and Mazar-i-Sharif Provinces during April. Severe damage by the pest was also reported in the areas of Akcha and Khan-i-gah. SOFT SCALES (*Lecanium* spp.) were very heavy during the spring on peach, almond, apple, pear and plum in Kabul, Wakan, and Ghazni Provinces; small limbs sometimes being covered solid with scales for one or two feet. ERMINE MOTH (*Yponomeuta padella*) and CODLING MOTH (*Carpocapsa pomonella*) were heavy on apple around Ghazni. A FRUIT-TREE MITE (*Bryobia rubrioculus*) was extremely heavy on apple in the Kabul area during the summer. APPLE APHID (*Aphis pomi*) and *Anuraphis mali* were heavy on apple throughout the fruit-growing areas of Afghanistan.

Vegetable Insects: A moderate population of a CUTWORM (*Agrotis* sp.) was observed damaging young cabbage, radishes and other vegetables on the Ministry Shisham Bagh farm in Jalalabad in April. About ten percent of cabbages were also heavily infested with CABBAGE APHID (*Brevicoryne brassicae*). About ten percent of these same cabbages were very heavily infested with LARGE WHITE BUTTERFLY (*Pieris brassicae*). TWO-SPOTTED SPIDER MITE (*Tetranychus telarius*) was extremely heavy at the Bolen farm near Bost on melons, squash, pumpkin and watermelon, and was extremely heavy on safflower, sesame and bush bean. The BALUCHISTAN MELON FLY (*Myiopardalis pardalina*) population was much reduced in the Helmand Valley compared with the past three years. This was probably due to the extremely cold winter with recorded temperatures of 13°F.

Citrus Insects: CITRUS PSYLLA (*Diaphorina citri*) was heavy in orange groves at Laghman in April, but was moderate at Jalalabad in April and August. CITRUS LEAF MINER (*Phyllocnistis citrella*) caused considerable damage on new growth of young citrus in nursery plots at Jalalabad. CITRUS WHITEFLY (*Dialeurodes citri*) and a SPIDER MITE (*Eutetranychus orientalis*) were moderate on citrus in September at Jalalabad.

Cotton Insects: CUTWORMS (*Agrotis* spp.) were again a problem in young cotton plantings in the Helmand Valley. Many farmers had to replant skips and damaged hills three and four times. The SPINY BOLLWORM (*Earias insulana*) population was apparently much lower during 1964, the highest report being 8 percent infestation in early October. This was in all probability due to the severe winter and low temperatures during January, which apparently reduced overwintering hibernation stages. Larvae of BEAN BUTTERFLY (*Lampides boeticus*) were observed attacking young cotton, alfalfa, jute and mung beans in the Helmand Valley, and damaged corn, cotton, vetch and sesame in the Chakhansur Basin. TWO-SPOTTED SPIDER MITE (*Tetranychus telarius*) was present in cotton by early October. This mite has not been much of a problem on cotton prior to this appearance.

Forest and Shade Tree Insects: A small CICADA (*Cicadatra* sp.) emerged in abundance on Russian-olive (*Elaeagnus* sp.) at Darweshan in the lower Helmand Valley. Emergence holes were much in evidence on the ground under these wind-break trees. Another abundant emergence of CICADAS was observed in June along the highway north of Kabul to Char-i-Kar. *Psalmochavias rugipennis*, *Paharia lacteipennis* and *Cicadatra anoea* were observed south of Coriz-i-Mir for about one kilometer on the roadside acacia trees and camel-thorn bushes. *Cicadatra anoea* was observed as numerous for about five kilometers on roadside mulberry trees at the Baghram airport road 30 miles north of Kabul. Damage was slight to the trees and cicadas did not appear to be in cultivated areas, only along roadside ditches. Paharia casyapae was abundant on mulberry trees in July, 225 miles south of Kabul along the highway to Kandahar. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was extremely heavy on locust (acacia) trees at Bost this summer. CLEAR-WINGED COTTONWOOD LEAF APHID (Chaitophorus populellus) was so heavy on poplar trees at Bamayan and in the Hazarajat that the trees glistened in the sunlight with honeydew, and the soil surface beneath the trees appeared to be oiled.

Field Crops: CUTWORMS (Agrotis spp.) were the main pests reported attacking sugar beets in Kataghan Province this spring. Sugarcane plots on the research farm at Bolen in the Helmand Valley were infested with a SUGARCANE ROOT BORER (Emmalocera depressella) and a SUGARCANE STEM BORER (Diatraea sticticraspis). This sugarcane stock was brought to Bolen from Jalalabad where both borers occur, and these pests were probably introduced with the planting stock. MAIZE AND JOWAR BORER (Chilo zonellus) infested about 80 percent of corn plantings on the Ministry Shisham Bagh farm at Jalalabad during September.

Stored-Product Insects: KHAPRA BEETLE (Trogoderma granarium) was moderate in wheat storage warehouses at Marja and Griskh in the Helmand Valley.

Insects Affecting Man and Animals: A number of homes of Americans in Kabul were infested with BEDBUG (Cimex lectularius). This pest is known to occur in at least 20 percent of the homes of the local population. A LOUSE FLY (Hippobosca longipennis) was quite annoying to dogs during the summer of 1964.

Beneficial Insects: MARSH FLIES of the family Sciomyzidae, the larvae of which are specific snail-killers, particularly of snails of the genus Lymnea, were found in Afghanistan in October. This genus of snails is intermediate host for liver fluke of sheep and cattle. Sepedon sphegea, Pherbellia cinerella, Pherbellia sp. and Knutsonia turcestanica were tentatively identified in a short survey from the Helmand Valley to Kabul. Sepedon appeared to be the predominant genus of flies collected. These were found at Kandahar, Nadi-Ali, Marja, and Shemalon in the Helmand Valley, and also near Mukur and Kabul. Pherbellia cineralla was collected at Kandahar, Pherbellia sp. at Ghazni and Knutsonia turcestanica at Kabul.

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